

# ENVIRONMENTAL & SUSTAINABLE CONSTRUCTION



Do you like taking on the challenge of building and renovation projects? Do you take pride in your woodworking or carpentry ability? Do you like taking on challenges and completing them? If you do, why not channel those interests and abilities into a career. Take a close look at the Environmental Construction Program. In this program you will gain hands on experiences in the essentials you will need to progress in the field. You will learn the skills needed to construct single family, multi family, and commercial buildings. Students will also learn energy management and alternative methods for heating and cooling buildings and residences. If college level work is attained, student may earn up to 12 LCC credits.

**Program Location:**  
LCC West Campus

**Session Offered:** PM

**Average Lecture Days/Week:** 2-3 days

**Average Lab Days/Week:** 2-3 days

**Homework:** Rarely

**Required reading:**  
College level textbook  
25+ pages/weekly

**LCC Credits Available:** 12  
(If college level work is attained)

**ACCUPLACER to receive LCC Credit:**

Reading Level: 3  
Writing Level: 4  
Math: 4

**Student learning outcomes include but are not limited to:**

- Define and use construction technology
- Identify construction materials and determine where they are used
- Identify alternative materials and construction options available.
- List and discuss various construction trades and what they do
- Read simple blueprints using standard symbols and abbreviations
- Perform introductory construction estimating
- Analyze various wood products, components and building materials
- Analyze various types of foundations
- Layout and cut rafters and stair supports using the framing square
- Estimate and install drywall materials, paneling materials and ceiling tile, suspended ceilings and wood flooring
- Estimate and install doors and door and window trim, base shoe, chair rail and ceiling molding
- Install and build cabinets
- Identify the components of the electrical and plumbing systems installed during residential construction.
- Analyze a site or location and evaluate it for solar applications.
- Describe passive heating and cooling building designs.
- Design a solar water heating system.
- Design a solar cooking device.
- Diagram a solar thermal electric system.
- Design a solar energy efficiency model.
- Analyze solar manufacturing issues including equipment evaluation and types of collectors/filters.
- Create a cost analysis for a solar powered project.
- Complete a solar energy project.



## HIGH SCHOOL/COLLEGE CREDIT

The primary focus of the Eaton RESA Career Preparation Center is to enhance a student's high school curriculum by providing an opportunity to learn a technical trade and/or to obtain a head start on a post-secondary education.

All students completing an Eaton RESA Career Center program at Lansing Community College **have the opportunity** to earn either direct or articulated college credit while completing their high school program if specific criteria are met.

LCC credit is awarded to a student who: a) completes the high school career and technical education course with the minimum grade point average; b) meets the performance objectives for a specific Lansing Community College course; and, c) passes the college course final examinations, if one is required. These credits are shown as numerical grades on the student's LCC transcript. Transcripts may be requested through Lansing Community College Enrollment Services Department by August following course completion.

The courses listed below show the possible LCC college credits that may be available to high school students taking an ERESA Career Preparation Program.

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*Credits listed below could be subject to change based on the project identified for the program*

#### **DCTM 100 Introduction to the Built Environment**

**3 LCC Credits**

This course covers concepts in the fields of Architecture, Building Trades, Construction Management, Energy Management, and Civil Technology. Students are guided through the entire process of building construction starting with design and surveying and finishing with the completion of construction and the commissioning process. Basic science concepts associated with the built environment will be covered. This includes properties of air and moisture, heat flows, structural integrity, and materials. Students will gain applied skills in blueprint reading as well as four weeks of labs construction building components.

#### **DCTM 102 Industrial/Construction Safety**

**2 LCC Credits**

This course covers safety in the industrial workplace and on construction worksites. Included are local, state and federal safety regulations. The focus will be on the prevention of accidents but will teach the correct response if an accident should occur. First aid, CPR/AED certificates will be required for successful completion.

#### **BLDT 121 Residential Framing & Foundations**

**4 LCC Credits**

Students will learn to frame residential buildings using accepted framing techniques such as framing member spacing, framing floor systems, interior and exterior walls, ceilings, roofs, and stairs. Various types of foundations and the advantages and disadvantages of each are covered. Hands-on methods are used.

#### **AEET 216 Solar Energies Technology**

**3 LCC Credits**

This course will cover the basics of solar energy generation including energy collection and storage. Solar power ranging from the heat of the day to solar electric conversion technologies will be covered including Solar Electric (Photovoltaic); Thermal; and Heating, Cooling and Lighting (Active and Passive). A brief history of solar powered energies will be included.